

WHAT IS CLAIMED IS:

1 1. A method for detecting speech activity for a signal, the method
2 comprising the steps of:
3 extracting a plurality of features from the signal;
4 modeling a first and a second probability density functions (PDFs) of the
5 plurality of features, wherein:
6 the first PDF models active speech conditions for the signal, and
7 the second PDF models inactive speech conditions for the signal;
8 adapting the first and second PDFs to respond to changes in the signal over
9 time;
10 probability-based classifying of the signal based, at least in part, on the
11 plurality of features; and
12 distinguishing speech in the signal based, at least in part, upon the probability-
13 based classifying step.

1 2. The method for detecting speech activity for the signal as recited in
2 claim 1, wherein the probability-based classifying step uses the first and second PDFs.

1 3. The method for detecting speech activity for the signal as recited in
2 claim 1, wherein the modeling step comprises a step of determining a mathematical model for
3 the signal from the plurality of features.

1 4. The method for detecting speech activity for the signal as recited in
2 claim 1, wherein the adapting step comprises a step of increasing a likelihood.

1 5. The method for detecting speech activity for the signal as recited in
2 claim 1, wherein the adapting step comprises a step of identifying extreme values in a long
3 sequence of previous frames.

1 6. The method for detecting speech activity for the signal as recited in
2 claim 1, wherein the probability-based classifying step comprises a step of classifying based
3 on likelihood ratio detection.

1 7. The method for detecting speech activity for the signal as recited in
2 claim 1, wherein the probability-based classifying step comprises applying a log-likelihood
3 ratio test to one of the plurality of features.

1 8. The method for detecting speech activity for the signal as recited in
2 claim 1, wherein at least one of the first and second PDFs comprises a Gaussian mixture
3 model.

1 9. The method for detecting speech activity for the signal as recited in
2 claim 1, wherein at least one of the first and second PDFs uses a non-Gaussian model.

1 10. The method for detecting speech activity for the signal as recited in
2 claim 1, wherein at least one of the first and second PDFs comprises a plurality of basic
3 density models.

1 11. The method for detecting speech activity for the signal as recited in
2 claim 1, wherein at least one of the plurality of features is related to power in a spectral band
3 of the signal.

1 12. The method for detecting speech activity for the signal as recited in
2 claim 1, further comprising a step of smoothing an activity decision for hangover periods to
3 produce a smoothed activity decision.

1 13. A computer-readable medium having computer-executable instructions
2 for performing the computer-implementable method for detecting speech activity for the
3 signal of claim 1.

1 14. A method for detecting sound activity for a signal, the method
2 comprising the steps of:
3 extracting a plurality of features from the signal;
4 modeling an active speech probability density function (PDF) of the plurality
5 of features;
6 modeling an inactive speech PDF of the plurality of features;
7 adapting the active and inactive speech PDFs to respond to changes in the
8 signal over time;

probability-based classifying of the signal based, at least in part, on the plurality of features; and distinguishing speech in the signal based, at least in part, upon the probability-based classifying step.

15. The method for detecting sound activity for the signal as recited in claim 14, wherein the probability-based classifying step uses the active and inactive speech PDFs.

16. The method for detecting sound activity for the signal as recited in claim 14, wherein the adapting step comprises a step of increasing a likelihood.

17. The method for detecting sound activity for the signal as recited in claim 14, wherein at least one of the active and inactive speech PDFs uses a non-Gaussian model.

18. A computer-readable medium having computer-executable instructions for performing the computer-implementable method for detecting sound activity for the signal of claim 14.

19. A method for detecting sound activity for a signal, the method comprising the steps of:
extracting a plurality of features from the signal;
modeling an active speech probability density function (PDF) of the plurality of features;
modeling an inactive speech PDF of the plurality of features, wherein at least one of the active and inactive speech PDFs uses a non-Gaussian model;
adapting the active and inactive speech PDFs to respond to changes in the signal over time;
probability-based classifying of the signal based, at least in part, the active and inactive speech PDFs; and
distinguishing speech in the signal based, at least in part, upon the probability-based classifying step.

20. The method for detecting sound activity for the signal as recited in claim 19, wherein both the active and inactive speech PDFs use a non-Gaussian model.

